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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/539,287	03/30/00	PEDERSEN	D P48D1-US

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MMC1/0523

EXAMINER	
VU,Q	
ART UNIT	PAPER NUMBER
2841	4

DATE MAILED: 05/23/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No.	Applicant(s)	
	09/539,287	PEDERSEN ET AL.	
	Examiner	Art Unit	
	Quynh-Nhu H. Vu	2841	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 40-64 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 40-64 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

15) ☒ Notice of References Cited (PTO-892)
16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
18) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
19) ☐ Notice of Informal Patent Application (PTO-152)
20) ☐ Other: .

DETAILED ACTION

1. It is not understood how the instant application can be a continuation-in-part of a provisional application 60/073,679. Applicant must clarify this situation.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the recited feature "the center point of the inner radius suitably offset from the center point of the outer radius so that the approximately circular region outlines a resilient member" of claim 41 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the recited feature "a post structure connected to the separate tip structure and joined to the resilient contact structure to make a third, modified resilient contact structure" of claim 61 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

4. There is no Figure 8 in the application. The Applicant must provide Figure 8.

Claim Objections

5. Claims 62-64 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The method of claims 62-64 do not further limit independent claim 40 from which they depend.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claim 61 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The specification does not disclose how a post structure connected to the separate tip structure and joined to the resilient contact structure to make a third, modified resilient contact structure.

8. Claim 41 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The specification and drawings are not shown "the center point of the inner radius suitably offset from the center point of the outer radius so that the approximately circular region outlines a resilient member" of claim 41.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

10. Claims 40-64 are rejected under 35 U.S.C. 102(e) as being anticipated by Eldridge et al. [US 5,897,326].

Eldridge et al. disclose in Figs. 4A-G a resilient contact structure (430) of conductive material, comprising: a base region connected to an electronic component (semiconductor device 402), the electronic component having a surface and a terminal (bond pads 404) near the surface, a main body region (the region of wire 420 substantially parallel with the substrate), displaced away from the surface, and connected to the base region (420a), each of the base and main body regions comprising the conductive material; whereby the resilient contact structure is secured to the electronic component and electrically connected to the terminal.

As claim 41, Eldridge et al. disclose in Figs. 4-5 the main body region comprising an approximately circular region, with n inner curve which is approximately circular with an inner radius which is smaller than an outer curve which is approximately circular with an outer radius. As far as the Figs. 4-6 show the center point of the inner radius suitably offset from the center point of the outer radius.

As to claim 42, Eldridge et al. clearly show in Figs. 4B-C the resilient contact structure further comprising a tip region (420a), connected to the main body region and protruding away from the main body region and away from the surface of the electronic component, electrically connected to the terminal.

As to claim 43, the main body region (the central region of wire 422) is approximately parallel to and displaced from the surface of the electronic component (see Figs. 4B-C).

As to claims 46 and 49, Eldridge et al. show in Figs. 4B or 7B that the resilient contact structure comprising a sloped region (420a of Fig 4B or 724 of Fig. 7B), which is connected base region and main body region, has angle between 60 to 77 degrees.

As to claims 52-53, Eldridge et al. show in Figs. 4B or 7B the base has sidewalls that substantially form a funnel-type structure.

As to claims 54-55, the conductive material (410) comprises a nickel, copper, tungsten, chromium etc... (col. 14, lines 1-31 and col. 26, lines 22-25).

As to claims 57 and 59, the electronic component is a semiconductor device (col. 24, lines 62-63 or Abstract).

As to claim 58, the electronic component is a semiconductor device that has been singulated from a wafer (see Abstract, lines 1-10).

As to claim 60, Eldridge et al. disclose in Figs. 2 or 8 that a tip structures (258 of Fig. 2 or 820 of Fig. 8) joined permanently to the resilient contact structure.

As to claim 61, a post structure (the wire of Fig 2E or 832 of Fig. 8) connected to the separate tip structure structures (258 of Fig. 2 or 820 of Fig. 8) and joined to the resilient contact structure.

As to claims 62-64, Eldridge et al. disclose in Fig. 7 that a second electronic component (semiconductor die 702) with a second terminal thereon and contacting the resilient contact structure (708) to the second terminal. Since the resilient contact structure contacting between the first and second terminal, therefore, a pressure connection between the resilient contact structure and the second terminal so as to effect an electrical connection between the first and the second terminals (see Figs. 7A-B).

11. Claims 40, 42-43, 48, 54-64 are alternatively rejected under 35 U.S.C. 102(b) as being anticipated by Sweis et al. [US 5,477,611].

Sweis et al. disclose in Figs. 3-5 a resilient contact structure of conductive material (29) comprising a base region (40) connected to an electronic component (10), the electronic component having a surface and a terminal (14) near the surface, a main body region (the middle part of 29) displaced away from the surface, and connected to the base region, each of the base and main body regions comprising the conductive material, whereby the resilient

contact structure is secured to the electronic component and electrically connected to the terminal.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13. Claims 44-45, 47, 49-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eldridge et al or Sweis et al.

Eldridge et al. or Sweis et al. disclose the claimed invention except for distance between a portion of the main body region and the surface of the electronic component about 5-200 mils; an area of base region connected to the surface of the electronic component about 10,000-40,000 square microns; the slope region of the connected base region and main body region about 60-75 degrees; the tip region protrudes between 2-7 mils, base width of tip region about 5-15 mils. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide the value of the distance between the main body region and the surface of the electronic component, the area, the slope region etc... that listed above, since they have been held that where the general conditions of a claim are disclosed in the prior art, discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesh, 617 F.2d 272, 205 USPQ (CCPA 1980).

14. Claims 46, 49 and 52-53 are alternatively rejected under 35 U.S.C. 103(a) as being unpatentable over Sweis et al. in view of DiStefano et al. [US 5,455,390].

Sweis et al. disclose the claimed invention except for a slope region which connected base region and main body region has an angle between 60-75 degrees.

As appearing in the Figs. 3-6, DiStefano et al. disclose a slope region which connected base region and main body region has an angle between 60-75 degrees.

Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ the slope region, as taught by DiSterfano et al., for the benefit of more supporting between the base region and the main body region.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quynh-Nhu H. Vu whose telephone number is 703-305-0850. The examiner can normally be reached on 7:30-5:00 (M-F).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey Gaffin can be reached on 703-308-3301. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7724 for regular communications and 703-308-7721 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

QNV
May 17, 2001